

AMENDMENT A

IN THE CLAIMS:

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1. (Currently Amended) An accumulating conveyor comprising:

a first plurality of zones, the zones capable of being separately driven in order to accumulate or transport cartons, each zone comprising:

a sensor ~~disposed within each of the first plurality of zones~~ for sensing the presence of a carton within the zone;

an actuator that allows movement of the sensor between an up position wherein the sensor is capable of contacting the cartons and a down position wherein the sensor is not capable of contacting the cartons; and

wherein the actuator of at least one of the zones ~~the actuators~~ comprises means for providing a signal to an adjacent, upstream zone to begin conveying cartons only when the sensor within the at least one zone senses the absence of a carton within that zone ~~are adapted such that when the conveyor switches from an accumulation mode to a transportation mode each actuator provides a signal to an adjacent, upstream zone to begin conveying cartons only when the zone senses the absence of a carton within the zone.~~

2. (Currently Amended) The conveyor of claim 1 wherein the actuator of the at least one zone comprises ~~two~~ a first and a second pistons disposed within a cylinder housing wherein the first piston comprises a stem and a bore, the stem being capable of operating the sensor of the same zone and the bore being capable of receiving a stem of the second piston, the two pistons

defining a central chamber, the second piston being capable of operating a valve ~~attached to~~
associated with the piston.

3. (Currently Amended) The conveyor of claim 3 2 wherein the valve comprises a valve stem movable between an on position and an off position, wherein in the on position a signal is transmitted to an upstream zone to start the upstream zone conveying cartons and in the off position the signal is removed.

4. (Currently Amended) The conveyor of claim 3 wherein the sensors ~~are~~ of the at least one zone is held in the down position except when the conveyor is accumulating and an adjacent downstream sensor senses the presence of a carton in an adjacent downstream zone.

5. (Currently Amended) The conveyor of claim 4 wherein the actuator of the at least one zone has three modes comprising:

a first mode wherein the sensor of the at least one zone is forced into the up position by a spring and wherein the first and second pistons are forced to the bottom of their travel within the cylinder housing and the valve stem is pushed to the on position by the second piston;

a second mode wherein the first piston is forced to the top of its travel and holds the sensor of the at least one zone in the down position and the second piston is forced to the bottom of its travel and holds the valve stem in the on position; and

a third mode wherein the sensor of the at least one zone is held in the down position by a carton and the valve stem is biased to the off position and forces the first and second pistons to the top of their travel.

6. (Currently Amended) The conveyor of claim 5 wherein when the at least one actuator is in the third mode an air inlet within the cylinder housing is blocked by the second piston.

7. (Currently Amended) The conveyor of claim 1 further comprising:
a second plurality of zones;
a sensor disposed within the second plurality of zones;
a dummy actuator disposed within the second plurality of zones that allows movement of the sensor between an up position wherein the sensor is capable of contacting the cartons and a down position wherein the sensor is not capable of contacting the cartons;

wherein the dummy actuators ~~are adapted such that when the~~ comprise means for providing a signal to an adjacent, upstream zone to begin conveying cartons immediately upon receiving a signal from an adjacent, downstream zone to begin conveying cartons when the conveyor switches from an accumulation mode to a transportation mode ~~each dummy actuator provides a signal to an adjacent, upstream zone to begin conveying cartons immediately upon receiving a signal from an adjacent, downstream zone to begin conveying cartons.~~

8. (Original) The conveyor of claim 7 wherein zones of the first plurality of zones and zones of the second plurality of zones are alternated.

9. (Original) The conveyor of claim 7 wherein zones of the first plurality of zones are provided every third zone and zones of the second plurality of zones comprise the remaining zones of the conveyor.

10. (Currently Amended) A method of controlling a conveyor comprising the steps of:
dividing the conveyor into a plurality of zones, wherein each zone is capable of being separately driven in order to accumulate or transport cartons;

providing a sensor for each zone, each sensor capable of sensing the presence of cartons within the zone;

holding the sensor in a down position where the sensor is not capable of contacting a carton at least 1) when the conveyor is not accumulating cartons and 2) while when the conveyor is accumulating cartons and when an adjacent, downstream sensor does not sense the presence of a carton within the downstream, adjacent zone; and

holding the sensor in an up position where the sensor is capable of contacting a carton only when the conveyor is accumulating cartons and an adjacent, downstream sensor senses the presence of a carton within the downstream, adjacent zone.

11. (Currently Amended) The method of claim 10 further comprising the step of:
switching a zone from an accumulation mode ~~where cartons have accumulated on the conveyor~~ to a transportation mode ~~where accumulated cartons are by conveying cartons from a~~

zone only when an adjacent, downstream zone does not sense the presence of a carton within the adjacent, downstream zone.

12. (Currently Amended) The method of claim 10 further comprising the steps of:
dividing the conveyor into a second plurality of zones, wherein each zone is capable of being separately driven in order to accumulate or transport cartons;

providing a dummy sensor disposed within each zone of the second plurality of zones;

holding the each dummy sensor in a down position where the each dummy sensor is not capable of contacting a carton: 1) when the conveyor is not accumulating cartons and 2) while accumulating cartons when an adjacent, downstream sensor does not sense the presence of a carton within the downstream, adjacent zone;

holding the each dummy sensor in an up position where the each dummy sensor is capable of contacting a carton only when the conveyor is accumulating cartons and an adjacent, downstream sensor senses the presence of a carton within the downstream, adjacent zone

in each of the second plurality of zones, sending a signal to an adjacent, upstream zone to begin conveying cartons immediately upon receiving a signal from an adjacent, downstream zone to begin conveying cartons.

13. (Currently Amended) The method of claim ~~of claim~~ 12 wherein zones of the first plurality of zones and zones of the second plurality of zones are alternated.

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14. (Original) The method of claim 12 wherein zones of the first plurality of zones are provided every third zone and zones of the second plurality of zones comprise the remaining zones of the conveyor.
